

CLAIMS

What is claimed is:

1 1. A method for diagnosis of a disorder associated with the development
2 of beta amyloid deposits or fibrils in a human or animal subject or assessing
3 the efficacy of treatment rendered to the subject for such disorder, said
4 method comprising the step of:

5 A) determining the presence of mtDNA CR mutations.

1 2. A method according to Claim 1, wherein Step A comprises making a
2 qualitative determination that mtDNS CR mutation is or is not present.

1 3. A method according to Claim 1, wherein Step A comprises making a
2 quantitative determination of mtDNS CR mutations.

1 4. A method according to Claim 3 further comprising the step of:

2 B) comparing a mtDNS CR value obtained by the quantitative
3 determination made in Step A with a control mtDNS CR value to determine
4 whether the subject has significantly more mtDNS CR mutations than control.

1 5. A method according to Claim 3 further comprising the step of:

2 B) comparing a mtDNS CR value obtained by the quantitative
3 determination made in Step A with a mtDNS CR value representative of
4 subjects who suffer from a disorder associated with the development of beta
5 amyloid deposits or fibrils.

1 6. A method according to any of Claim 1 wherein Step A comprises
2 testing for a T4141G mutation.

1 7. A method according to any of Claim 1 wherein Step A comprises
2 testing for a T414C mutation.

1 8. A method according to any of Claim 1 wherein Step A comprises
2 testing for a T477C mutation.

1 9. A method according to any of Claim 1 wherein Step A comprises
2 testing for a T146C mutation.

1 10. A method according to any of Claim 1 wherein Step A comprises
2 testing for a T152C mutation.

1 11. A method according to any of Claim 1 wherein Step A comprises
2 testing for a A189G mutation.

1 12. A method according to any of Claim 1 wherein Step A comprises
2 testing for a T195C mutation.

1 13. A method according to Claim 1 wherein Step A is carried out at least in
2 part by PNA-clamping PCR.

1 14. A method according to Claim 1 wherein Step A is carried out at least in
2 part by oligonucleotide hybridization.

1 15. A method according to Claim 1 wherein Step A is carried out at least in
2 part by primer extension.

1 16. A method according to Claim 1 wherein Step A is carried out at least in
2 part by restriction digestion.

1 17. A method according to Claim 1 wherein the determination of Step A is
2 made in a specimen of tissue, cells or body fluid selected from the group
3 consisting of:

- 4 i. brain tissue;
- 5 ii. brain tissue from the frontal cortex;
- 6 iii. nervous tissue;
- 7 iv. nerve cells

1 18. A method according to Claim 1 wherein the method is carried out for
2 post-symptomatic diagnosis of a disorder in a subject who has begun to
3 exhibit symptoms of that disorder.

1 19. A method according to Claim 1 wherein the method is carried out for
2 pre-symptomatic diagnosis of a disorder in a subject who has not begun to
3 exhibit symptoms of that disorder.

1 20. A method according to Claim 1 wherein the disorder is a
2 neurodegenerative disease.

1 21. A method according to Claim 1 wherein the disorder is Alzheimer's
2 Disease.

1 22. A method according to Claim 1 wherein the disorder is Parkinson's
2 Disease.

1 23. A method according to Claim 1 wherein the disorder is Down's
2 Syndrome-associated dementia.

1 24. A method according to Claim 1 wherein the disorder is a spongiform
2 encephalopathy.

1 25. A method according to Claim 1 wherein the disorder is type II diabetes.

1 26. A method according to Claim 1 wherein the disorder is Creutzfeldt-
2 Jakob disease.

1 27. A method according to Claim 1 wherein the disorder is a Huntington's
2 disease.

1 28. A method according to Claim 1 wherein the disorder is macular
2 degeneration.

1 29. A method according to Claim 1 wherein the disorder is a prion disease.

1 30. A method according to Claim 1 wherein Step A comprises:
2 obtaining sample cells from the subject;
3 extracting DNA from the sample cells;
4 subjecting the extracted DNA to mitochondrial DNA control region
5 amplification;
6 determining whether homoplasmic 414 and 477 nucleotide variants are
7 present by direct sequencing for heteroplasmic 414 and 477 nucleotide
8 mutations; and
9 if 414 and 477 nucleotide variants are detected, cloning the mutant
10 molecules and sequencing the clone.

1 31. A test system comprising reagents and/or materials useable to perform
2 a method according to any of Claims 1-30.

1 32. A test system according to claim 31 further comprising instructions for
2 use.

1 33. A test system according to claim 31 further comprising a reference
2 containing control data.

1 34. A test system according to claim 33 wherein the reference comprises
2 computer software.